Volume 58 1982

Mathematical Biosciences

an international journal

ELSEVIER BIOMEDICAL

Mathematical Biosciences

an international journal

Editor **John A. Jacquez**

Editorial Assistant
MRS. MARIANNE JACQUEZ
490 Huntington Drive
Ann Arbor, Michigan 48104

Book Review Editor
Alan S. Perelson
Los Alamos Scientific Lab.
P.O. Box 1663
Los Alamos, New Mexico 87545

Associate Editors

Richard Bellman
Founding Editor
Department of Electrical Engineering
University of Southern California
Los Angeles, California 90007

Charles J. Mode
Department of Mathematics
and Institute for Population Studies
Drexel University
Philadelphia, Pennsylvania 19104

Robert M. May
Department of Biology
Princeton University
Princeton, New Jersey 08540

Editorial Board

Rutherford Aris
Department of Chemical Engineering
and Materials Science
University of Minnesota

George A. Bekey
Biomedical Engineering
University of Southern California

Leslie E. Blumenson
Roswell Park Memorial Institute
Buffalo, New York 14263

Chin Long Chiang
Department of Biomedical
and Environmental Health Sciences
University of California, Berkeley

Claudio Cobelli
Department of Electrical Engineering
University of Padua
35100 Padua, Italy

Charles Delisi
National Cancer Institute
Bethesda, Maryland 20014

George F. Estabrook
Department of Botany
The University of Michigan

Stephen Grossberg
Department of Mathematics
Boston University 02215

John Z. Hearon
National Institute of Arthritis
Bethesda, Maryland 20014

Birger Jansson
M. D. Anderson Hospital
and Tumor Institute
Houston, Texas 77025

Samuel Karlin
Department of Mathematics
Stanford University

H. G. Othmer
Department of Mathematics
The University of Utah
Salt Lake City, Utah 84112

John Rinzel
National Institute of Arthritis
Bethesda, Maryland 20014

Michael A. Savageau
Department of Microbiology
The University of Michigan

Lawrence Stark
Physiological Optics
University of California, Berkeley

John L. Stephenson
NHLBI, NIH
Bethesda, Maryland 20014

James A. Yorke
Institute for Physical Science
and Technology
College Park, Maryland 20742

Mathematical Biosciences

an international journal

Volume 58 1982

DONAT-P. HADER AND UHLAND BURKART (Marburg, Federal Republic of Germany)
Mathematical Simulation of Photophobic Responses in Blue-Green Algae 1

Y. PLUSQUELLEC (Toulouse, France) AND J. L. STEIMER AND J. F. BOISVIEUX (Paris, France)
Can Compartment Models Account for Nonmonotonicity in Pharmacokinetics? 19

C. COBELLI, G. FEDERSPIL, G. PACINI, A. SALVAN, AND C. SCANDELLARI (Padova, Italy)
An Integrated Mathematical Model of the Dynamics of
Blood Glucose and Its Hormonal Control 27

DAVID H. ANDERSON (Dallas, TX)
Structural Properties of Compartmental Models 61

WILLIAM SQUIRE (Morgantown, WV)
A New Approach for Calculating Association Constants from
Macromolecule-Ligand Binding Isotherms 83

HERBERT W. HETHCOTE (Iowa City, IA), JAMES A. YORKE (College Park, MD), AND ANNETT NOLD (Washington, DC)
Gonorrhea Modeling: A Comparison of Control Methods 93

DAVID P. HARRINGTON (Charlottesville, VA) AND THOMAS R. FLEMING (Rochester, MN)
Statistical Properties of Estimators for Continuous Time
Markov Branching Processes with Varying and Random Environments 111

FREDERICK R. MAROTTO (New York, NY)
The Dynamics of a Discrete Population Model with Threshold 123

J. N. RIDLEY (Johannesburg, Republic of South Africa)
Packing Efficiency in Sunflower Heads 129

MATTHEW WITTEN (Los Angeles, CA)
A Systems Analog Mime for Color Vision and Vision Disorders in Humans 141

MARCO V. JOSÉ AND CARLOS LARRALDE (Mexico City, Mexico)
Alternative Interpretation of Unusual Scatchard Plots: Contribution of Interactions and Heterogeneity 159

ERIC P. SALATHÉ (Bethlehem, PA)
Mathematical Modeling of Oxygen Transport in Skeletal Muscle 171

ROSS DUNSTAN (Western Australia)
A Note on the "Sixth Power Law" of Carcinogenesis 185

HELMUT VOGEL, GERHARD CZIHAK, AND PATRICK CHANG, (Montpellier, France), AND WIELAND WOLF (Salzburg, Austria)
Fertilization Kinetics of Sea Urchin Eggs 189

J. P. PAUWELUSSEN (Amsterdam, The Netherlands)
Heteroclinic Waves of the FitzHugh-Nagumo Equations 217

KAREN BECK (Salt Lake City, UT)
A Model of the Population Genetics of Cystic Fibrosis in the United States 243

J. EISENFELD (Arlington and Dallas, TX)
On Washout in Nonlinear Compartmental Systems 259

A. C. TRAJSTMAN AND R. L. TWEEDIE (Victoria, Australia)
Techniques for Estimating Parameters in Bartoszyński's Virus Model 277

BOOK REVIEWS 309